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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/769,243	01/30/2004	Jacek Stachurski	TI-35418	8176

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EXAMINER	
SAINT CYR, LEONARD	
ART UNIT	PAPER NUMBER
2626	

NOTIFICATION DATE	DELIVERY MODE
03/15/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com

Office Action Summary	Application No.	Applicant(s)	
	10/769,243	STACHURSKI ET AL.	
	Examiner	Art Unit	
	LEONARD SAINT CYR	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08/05/04* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 12/01/09 have been fully considered but they are not persuasive.

Applicant argues that neither Gersho nor Honda suggest or show motivation for modifying the reference or to combine the reference teachings (Amendment, page 6).

The examiner disagrees, since "synchronization when switching from a transition segment to a harmonic segment" in Gersho et al., would be modified by replacing the zero linear phase (Gersho et al., col.15, lines 11 – 27) with the phase equalizing analyzing part 4 (cols.4, and 7) of Honda (US Patent 4,850,022); because that would help better discriminate the voice/unvoiced sound, and adaptively vary the phase-equalizing characteristics of a phase-equalizing filter 38 in accordance with the change in phases of the residual waveform (col.7, lines 35 – 50), which would enhance the speech signals and would make the system more effective by classifying the speech signals.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1 – 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gersho et al., (US Patent 6,233,550), in view of Honda (US Patent 4,850,022).

As per claim 1, Gersho et al., teach a method of speech encoding of a digital signal processor, comprising:

estimating a filter coefficient ("filtering using a linear prediction filter") and a bandpass voicing strengths in a frequency band ("for every frame, a speech classifier module classifies the speech as stationary unvoiced, steady state or transition speech"; figs 1A, and 1B; col.5, lines 51 – 54; col.13, lines 22 – 25; col.18, lines 17 – 21);

removing linear phase from the filter ("the initial linear phase was simply set to zero" is considered as removing the linear phase; col.15, lines 24 – 26);

adding back the linear component to the filter ("the initial linear phase has to be estimated and used in the synthetic phase model"; col.15, lines 30 – 33).

However Gersho et al., do not specifically disclose estimating a zero-phase equalization filter coefficient; setting the phase of the equalization filter coefficient to a zero, wherein the equalization filter coefficient corresponds to a low-voiced harmonics identified by bandpass voicing estimate.

Honda teaches that in **the phase equalizing-analyzing part coefficients of a phase equalizing filter for rendering the phase characteristic of the speech into a zero phase and reference time points of phase equalization are computed** (col.4, lines 5 – 9). When a sound is discriminated to be a voiced sound V, the residual waveform e(n) inputted at the terminal is supplied through the switch to a phase-equalizing filter " (col.7, lines 64 – 66).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to render the phase characteristic of the speech into a

zero phase as taught by Honda in Gersho et al., because that would help classify the speech signal (col.7, lines 42 – 45).

As per claim 2, Gersho et al., in view of Honda further disclose identified bandpass voicing uses the frequency bands 0-500 Hz, 500-1000 Hz, 1000-2000 Hz, 2000-3000 Hz, and 3000-4000 Hz (Gersho et al., see figures; figs 1A, and 1B).

As per claim 3, Gersho et al., in view of Honda further disclose that the frequency band is a pre-determined frequency band (Gersho et al., see figures, where pre-determined frequency bands are shown; figs 1A, and 1B).

As per claim 4, Gersho et al., in view of Honda do not specifically teach waveform shifting by placing an estimated pitch peak at the start of the equalization filter coefficient. **However, since Gersho et al., disclose** that from the waveform difference between FIG. 3B and FIG. 3C it is evident that the DFT measured phases govern two aspects of the speech waveform. **First, they control the location of the pitch epochs**, and second they define the detailed structure of the pitch pulse. Hence, the DFT measured phase, .phi..sub.k.sup.h, can be broken into two terms: a constant linear phase k.theta..sub.0, and a dispersion phase .psi..sub.k.sup.h. **The linear phase introduces a time shift which places an epoch of r(t) at: theta/ (2pi f)** [col.6. lines 45 – 60). One having ordinary skill in the art at the time the invention was made would have found it obvious to place the estimated pitch peak at the start of the equalization

filter coefficient in Gersho et al., in view of Honda, because that would ensure that the modified residual signal will give speech quality as good as the original one (col.22, lines 44 – 46).

As per claim 5, Gersho et al., in view of Honda further disclose the bandpass voicing estimate is utilized for improving performance of at least one of zero-phase equalization or selective zero-phase equalization ("**When a sound is discriminated to be a voiced sound V**, the residual waveform e(n) inputted at the terminal **is supplied through the switch to a phase-equalizing filter** "; col.7, lines 64 – 66).

As per claim 6, Gersho et al., teach an apparatus of speech encoding of a digital signal processor, comprising:

means ("filter") for estimating a filter coefficient ("filtering using a linear prediction filter") and a bandpass voicing strengths in a frequency band ("for every frame, a speech classifier module classifies the speech as stationary unvoiced, steady state or transition speech"; figs 1A, and 1B; col.5, lines 51 – 54; col.13, lines 22 – 25; col.18, lines 17 – 21);

means ("carried out at the encoder") for removing linear phase from the filter ("the initial linear phase was simply set to zero" is considered as removing the linear phase; col.15, lines 24 – 26; col.17, lines 21 - 28);

means (“the encoder uses the linear phase") for adding back the linear component to the filter (“the initial linear phase has to be estimated and used in the synthetic phase model”; col.14, lines 63 – 67; col.15, lines 30 – 33).

However Gersho et al., do not specifically disclose estimating a zero-phase equalization filter coefficient; means setting the phase of the equalization filter coefficient to a zero, wherein the equalization filter coefficient corresponds to a low-voiced harmonics identified by bandpass voicing estimate.

Honda teaches that in **the phase equalizing-analyzing part coefficients of a phase equalizing filter for rendering the phase characteristic of the speech into a zero phase and reference time points of phase equalization are computed** (col.4, lines 5 – 9). When a sound is discriminated to be a voiced sound V, the residual waveform e(n) inputted at the terminal is supplied through the switch to a phase-equalizing filter " (col.7, lines 64 – 66).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to render the phase characteristic of the speech into a zero phase as taught by Honda in Gersho et al., because that would help classify the speech signal (col.7, lines 42 – 45).

As per claim 7, Gersho et al., in view of Honda further disclose identified bandpass voicing uses the frequency bands 0-500 Hz, 500-1000 Hz, 1000-2000 Hz, 2000-3000 Hz, and 3000-4000 Hz (Gersho et al., see figures; figs 1A, and 1B).

As per claim 8, Gersho et al., in view of Honda further disclose that the frequency band is a pre-determined frequency band (Gersho et al., see figures, where pre-determined frequency bands are shown; figs 1A, and 1B).

As per claim 9, Gersho et al., in view of Honda do not specifically teach waveform shifting by placing an estimated pitch peak at the start of the equalization filter coefficient. **However, since Gersho et al., disclose** that from the waveform difference between FIG. 3B and FIG. 3C it is evident that the DFT measured phases govern two aspects of the speech waveform. **First, they control the location of the pitch epochs**, and second they define the detailed structure of the pitch pulse. Hence, the DFT measured phase, .phi..sub.k.sup.h, can be broken into two terms: a constant linear phase k.theta..sub.0, and a dispersion phase .psi..sub.k.sup.h. **The linear phase introduces a time shift which places an epoch of r(t) at: theta/ (2pi f)** [col.6. lines 45 – 60). One having ordinary skill in the art at the time the invention was made would have found it obvious to place the estimated pitch peak at the start of the equalization filter coefficient in Gersho et al., in view of Honda, because that would ensure that the modified residual signal will give speech quality as good as the original one (col.22, lines 44 – 46).

As per claim 10, Gersho et al., in view of Honda further disclose the bandpass voicing estimate is utilized for improving performance of at least one of zero-phase equalization or selective zero-phase equalization ("**When a sound is discriminated to**

be a voiced sound V, the residual waveform e(n) inputted at the terminal **is supplied through the switch to a phase-equalizing filter** "; col.7, lines 64 – 66).

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEONARD SAINT CYR whose telephone number is (571) 272-4247. The examiner can normally be reached on Mon- Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or (571)-272-1000.

LS

03/01/10

/Richemond Dorvil/
Supervisory Patent Examiner, Art Unit 2626